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SOCIAL CLASS AND COGNITIVE DEVELOPMENT IN INFANCY.

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THE PURPOSE OF THIS STUDY WAS TO FIND OUT WHETHER SOCIAL CLASS DIFFERENCES IN INTELLECTUAL DEVELOPMENT ARE PRESENT IF (1) CHILDREN FROM SOCIALLY DISORGANIZED SLUM FAMILIES ARE COMPARED WITH CHILDREN FROM STABLE, LOW INCOME AND MIDDLE INCOME FAMILIES, (2) THE PIAGET OBJECT SCALE, A NEW MEASURE OF COGNITIVE DEVELOPMENT BASED ON PIAGET'S SENSORIMOTOR OBSERVATIONS, IS EMPLOYED, AND (3) EFFORT IS MADE TO OVERCOME ANY MOTIVATIONAL FACTORS ABLE TO INTERFERE WITH TEST PERFORMANCE. IN A CROSS-SECTIONAL APPROACH, 184 NEGRO CHILDREN, OF 12, 18, AND 24 MONTHS OF AGE REPRESENTING 3 SOCIOECONOMIC STATUS GROUPS, WERE COMPARED ON THE PIAGET OBJECT SCALE AND THE CATTELL INFANT INTELLIGENCE SCALE. RESULTS SHOWED NO DIFFERENCES AMONG THE 3 GROUPS ON EITHER SCALE. HOWEVER, INFANTS WERE RATED ON SUCCESS OR FAILURE ON A GIVEN ITEM WITHOUT REGARD TO THE NUMBER OF TRIALS OR TIME REQUIRED, SO SOCIAL CLASS DIFFERENCES MAY HAVE BEEN HIDDEN. PREVIOUS RESEARCH FINDINGS WHICH INDICATED THAT SOCIAL CLASS DIFFERENCES IN INTELLECTUAL DEVELOPMENT DO NOT APPEAR DURING THE FIRST 2 YEARS WERE CONFIRMED. AFTER 2 YEARS LANGUAGE BECOMES IMPORTANT FOR LEARNING, AND DIFFERENCES ARE NOTED. DIFFERENCES IN PATTERNS OF MOTIVATION AND COGNITIVE STYLE OCCUR EARLY BUT SHOW UP IN LATER LEARNING. THEREFORE, COMPENSATORY EDUCATION PROGRAMS SHOULD FOSTER THE KINDS OF MOTIVATIONS AND COGNITIVE SKILLS WHICH WILL BE NEEDED FOR ABSTRACT THINKING AND ACADEMIC SUCCESS. THIS PAPER WAS PRESENTED AT THE MEETING OF THE SOCIETY FOR RESEARCH IN CHILD DEVELOPMENT, (NEW YORK CITY, MARCH 30, 1967). (MS)

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SOCIAL CLASS AND COGNITIVE DEVELOPMENT IN INFANCY

Mark Golden and Beverly Birns

Intellectual performance has been shown to be highly correlated with social class. (Masland et al, 1959; Stevens and Heber, 1964) In previous studies, however, if such factors as birth complications and poor nutrition and health are excluded, social class differences in intelligence have not been found until the third year of life, when language becomes increasingly important for learning. (Knoblock and Pasamanick, 1960; Hindley, 1960; Bayley, 1965)

The fact that such a relationship has not been found during the preverbal period may be due to the following factors: (1) In earlier studies middle-class children have been compared with lower-class groups. Pavenstedt (1965) and Malone (1963) have reported striking differences in cognitive and personality functioning between older pre-school children from stable, low-income families and those from impoverished, socially disorganized families, which they attributed to gross differences in child-rearing environment. The children from socially disorganized families already manifested serious learning problems by the time they entered nursery school at 3 years of age, due to their inability to pay attention, lack of persistence, and so forth. (2) Previous studies on

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the relationship between social class and intellectual development during the preverbal period have relied on infant tests, such as the Gesell Developmental Examination, which may not be direct measures of problem-solving ability. The validity of the currently used infant tests as precursors of later cognitive development has been questioned, because of the generally low correlations with later measures of intelligence . . . (Bayley, 1958).

One of the present authors has worked with Dr. Sibylle Escalona and others at the Albert Einstein College of Medicine on the construction and validation of scales of cognitive development based on Piaget's observations during the sensorimotor period. While there is some overlap with items on the infant tests, the behaviors measured by the Piaget Scales seem more related to problem-solving ability, and hence may be more sensitive to social class influences.

The direct impetus for the present study emerged from some unexpected observations made in the course of developing one of the Piaget Scales, the Object Scale, which requires children to search for toys hidden under one or more screens under increasingly complex conditions. While most of the babies we had seen came from working-class and middle-class families, we had occasion to test 15 to 20 slum children. Although, most of the working class and middle-class children did not particularly enjoy the hiding game itself, they were highly motivated to search in order to obtain the desired object or toy. A few of the children seemed to enjoy the game for its own sake, and would, for example, eagerly return a toy or cookie to the Examiner to hide again. The behavior of many of the slum children, on the other hand, was similar to what has been observed

in institutionalized infants. Most of the children refused to search for the toy altogether; a few searched but gave up when the procedure was repeated, and retreated into what appeared to be a state of apathetic withdrawal. We were curious to find out whether the behavior of the slum children in response to the Object Scale was due to a cognitive deficit, to motivational factors, or both.

The purpose of the present study was to find out whether social class differences in intellectual development are present if: (1) Children from socially disorganized slum families are compared with children from stable, low income and middle income families; (2) The Piaget Object Scale, a new measure of cognitive development, is employed; and (3) Every effort is made to overcome any motivation factors which might seriously interfere with test performance, so that a valid estimate of each child's optimal level of cognitive achievement can be obtained.

METHOD

Using a cross-sectional approach, 184 Negro children of 12, 18, and 24 months of age, plus or minus a month, representing 3 SES groups, were compared on the Piaget Object Scale and the Cattell Infant Intelligence Scale.

SUBJECTS

Negro children from the following 3 SES groups were compared: (A) Fatherless-Welfare Families; (B) Stable-Low-Educational-Occupational-Status Families--neither mother or father have more than a High School education, or have been employed at more than unskilled or semi-skilled jobs; and (C) Higher-Educational-Occupational-Status Families-- either mother or father have some schooling beyond High School, or have been employed at skilled or professional jobs.

OBJECT SCALE

The Object Scale is based on Piaget's observations in The Construction of Reality in the Child (1954) on the development of the object concept during the sensorimotor period, roughly the first 18 months of life. According to Piaget, the infant learns certain important characteristics of objects. He learns that objects are relatively permanent, that they are separate entities, independent of himself and the actions he performs upon them, that they continue to exist outside of his perceptual field, and that their displacements or movements in space follow certain rules or laws. The steps in the development of the object concept are measured by the child's ability to search for objects when they are removed from his perceptual field or are hidden under one or more screens, under increasingly complex conditions.

The Object Scale used in the present study is a modified form of a Scale developed at the Albert Einstein College of Medicine.[1] A cross-sectional validation study on 113 children confirmed the sequence of stages described by Piaget, by means of a Guttman Scalogram analysis, and indicated that there is a high non-linear correlation between performance on the Object Scale and chronological age. The Correlation Ratio between age and number of items passed was .83. The correlation is comparable to that reported by Decarie, who also obtained somewhat

1. The authors express their appreciation to Drs. Sibylle Escalona and Harvey Corman for permitting the use of a modified form of the Object Scale constructed for their study on early ego development.

higher correlations between a similar Object Scale and Mental Age scores on the Griffiths Developmental Examination. (1965) The 12 items included in the modified Object Scale constitute a perfect Guttman Scale, and the difficulty of the items range between approximately 5 and 26 months of age.

RESULTS AND DISCUSSION

The results of the present study confirm the previous research findings: that social class differencesin intellectual development do not appear during the first 2 years of life. Comparing children from fatherless welfare families with children from stable low-income and middle-income families, using a new assessment technique, and making every effort to overcome motivational factors which might interfere with test performance, we did not find any differences among the 3 SES groups at 12, 18, or 24 months of age on either the Object Scale or the Cattell. Negro children from welfare families did not show any intellectual retardation during the first 2 years, when compared with children from stable low and middle-income Negro families.

Many of the welfare children, however, did show the same degree of inhibition or resistance to responding to the tests, and particularly to the Object Scale, which was described previously. With patience, ingenuity, and effort it was possible to get these children to perform at the same intellectual level as the children from the two higher SES groups. The observation that it required a great deal more effort on the part of the Examiner to get the welfare children as a group to perform at their optimal intellectual level

is supported by the fact that significantly more children in this group had to be seen on more than one occasion to obtain a valid estimate of their intellectual ability. 28% of the welfare children had to be seen more than once, in comparison to 14% and 6% of the stable low and middle-income children respectively. A Chi-Square Test indicates that these differences in frequency of visits are significant at the .01 level.

The administration and scoring of infant intelligence tests, such as the Cattell or Gesell Developmental Examination, are not as highly standardized as intelligence tests for older children and adults, nor do they take into account response parameters which are considered important in experimental research on learning. This is also true of the Object Scale. For example, the number of trials or amount of time required for the child to obtain a positive score on a test item--two important response measures in research on learning--are not taken into consideration. An infant's score is based entirely on whether he ultimately succeeds or fails to perform the item. By not taking such factors into account, social class differences in intellectual performance may be masked or washed out. We plan to do a further study in which the children are tested under more experimentally controlled conditions, and in which such important response parameters as amount of time and number of trials required to get the child to pass test items will be included as measures.

It should be pointed out that, although the welfare children as a group appeared to be the most difficult to test, there were striking

intra-group differences in this respect. Therefore, we also plan to study variables in the child-rearing environment which may be related to motivational factors that interfere with or facilitate childrens' responsiveness in the test situation.

The implication of the results of the present study, in relation to other research, is that the home environment of Negro slum children does not seem to interfere with the development of sensorimotor intelligence, but may lack the kind of stimulation necessary for learning when language comes into the picture, between 2 and 3 years of age. Given an average expectable environment, in which children are relatively free to explore and manipulate objects, they can acquire the kinds of sensorimotor schemata measured by the infant intelligence tests and Piaget Scales on their own, whereas language, by its nature, must be transmitted socially. This may explain why social class seems to have so little influence on the development of sensorimotor intelligence, but appears to have such a pervasive effect on cognitive development after 2 years of age, when language becomes important for learning. It has been estimated that, of the approximately 5 1/2 million mentally retarded persons in the United States, 75% show no evidence of organic pathology and a significantly large proportion of these individuals are members of socially disadvantaged groups in our society. (Masland et al, 1959; Stevens and Heber, 1964)

The acquisition of motivations and cognitive skills which may be crucial for later learning--such as achievement motivation, intellectual curiousity, persistence, the ability to deploy attention selectively and

for extended periods of time, learning to learn--may also depend on close interaction in a learning situation with a significant adult. For a variety of reasons, slum children have relatively very little positive experience in such a one-to-one learning relationship with an important adult, which can be transferred to a testing situation or learning from an unfamiliar adult in a more formal school setting. Middle-class children, on the other hand are more likely to have such an experience and are trained to perform intellectually from a very early age. Santostefano demonstrated that by having mothers of retarded pre-school children train them at home to improve their skill in an important cognitive function, focal attention, there was a significant improvement in their subsequent test performance on a variety of non-verbal tasks, and they were able to benefit more from instruction by the Examiner. (1966) Santostefano suggests that educational procedures for retarded children should be specifically directed at promoting such cognitive skills as attention deployment, as well as achieving academic and social skills. The same kind of special training may be beneficial to socially disadvantagedpre-school children.

Although social class differences in sensorimotor intelligence have not been demonstrated, it is believed that social class differentiation in patterns of motivation and cognitive style occur during these early formative years, but may only manifest themselves when the child is older, as a sleeper effect, in later learning problems. In addition to helping socially disadvantaged children to improve their language skills and teaching specific concepts, compensatory educational

procedures for very young pre-school children should also be directed to fostering the kinds of motivations and cognitive skills, such as attention deployment, which may be important in the development of abstract thinking ability and academic achievement.

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